

**What is claimed:**

1. A method for ablating an interior region of an organ or duct within a body of a patient comprising:
  - providing an introducer comprising a proximal end, a sharpened distal end, and at least one lumen which is sized and dimensioned for slidable receipt of at least a portion of an ablation device therethrough;
  - penetrating a wall of the organ or duct with the sharpened distal end of the introducer;
  - advancing at least an energy delivery portion of the ablation device within the at least one lumen of the introducer into the interior of the organ or duct;
  - positioning at least a portion of the energy delivery portion into at least close proximity with a tissue region within the interior of the organ or duct;
  - applying energy to the energy delivery portion to effect ablation of the tissue region.
2. The method of claim 1 wherein said penetrating comprises forming an opening in a wall of the heart of a patient into an interior chamber thereof.
3. The method of claim 2 wherein the interior chamber is selected from a right atrium or a left atrium of the heart.
4. The method of claim 1 wherein said ablation device comprises a steering mechanism associated with the proximal end of the device, and wherein said positioning further comprises manipulating said steering mechanism to cause at least a portion of the energy delivery portion to assume an angular orientation relative to a longitudinal axis of the device.
5. The method of claim 4 wherein said angular orientation is between about 0 and 90 degrees relative to the longitudinal axis of the device.
6. The method of claim 4 wherein said angular orientation is between about 45 and 135 degrees relative to the longitudinal axis of the device.

7. The method of claim 1 wherein said energy delivery portion comprises an antenna which is configured to be electrically coupled to a source of microwave energy.
8. The method of claim 1 wherein said energy delivery portion is preshaped to extend at an angle relative to a longitudinal axis of the ablation device.
9. The method of claim 8 wherein said energy delivery portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the ablation device.
10. The method of claim 8 wherein said energy delivery portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the ablation device.
11. The method of claim 8 wherein said energy delivery portion includes a biasing element which is configured to bias the energy delivery portion into its preshaped angular orientation relative to the longitudinal axis of the ablation device.
12. The method of claim 11 wherein said biasing element comprises a nitinol wire.
13. The method of claim 1 wherein said organ or duct comprises a beating heart.
14. The method of claim 1 wherein said ablation device is a microwave probe.
15. The method of claim 1 wherein said ablation device is a radiofrequency probe.
16. The method of claim 1 wherein said ablation device is a laser probe.
17. The method of claim 1 wherein said ablation device is a cryosurgical

probe.

18. The method of claims 1 wherein said energy delivery portion is configured to substantially make no contact with a tissue region to be ablated within the interior of the organ or duct.

19. A method for ablating an interior region of an organ or duct within a body of a patient comprising:

providing an ablation device comprising a proximal end, a sharpened distal end, and an energy delivery portion located proximate to said distal end;

penetrating a wall of the organ or duct with the sharpened distal end of the ablation device;

advancing at least the energy delivery portion of the ablation device into the interior of the organ or duct;

positioning at least a portion of the energy delivery portion into at least close proximity with a tissue region within the interior of the organ or duct;

applying energy to the energy delivery portion to effect ablation of the tissue region.

20. The method of claim 19 wherein said penetrating comprises forming an opening in a wall of the heart of a patient into an interior chamber thereof.

21. The method of claim 20 wherein the interior chamber is selected from a right atrium or a left atrium of the heart.

22. The method of claim 19 wherein said ablation device comprises a steering mechanism associated with the proximal end of the device, and wherein said positioning further comprises manipulating said steering mechanism to cause at least a portion of the energy delivery portion to assume an angular orientation relative to a longitudinal axis of the device.

23. The method of claim 22 wherein said angular orientation is between about 0 and 90 degrees relative to the longitudinal axis of the device.

24. The method of claim 22 wherein said angular orientation is between about 45 and 135 degrees relative to the longitudinal axis of the device.
25. The method of claim 19 wherein said energy delivery portion comprises an antenna which is configured to be electrically coupled to a source of microwave energy.
26. The method of claim 19 wherein said energy delivery portion is preshaped to extend at an angle relative to a longitudinal axis of the ablation device.
27. The method of claim 26 wherein said energy delivery portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the ablation device.
28. The method of claim 26 wherein said energy delivery portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the ablation device.
29. The method of claim 26 wherein said energy delivery portion includes a biasing element which is configured to bias the energy delivery portion into its preshaped angular orientation relative to the longitudinal axis of the ablation device.
30. The method of claim 29 wherein said biasing element comprises a nitinol wire.
31. The method of claim 19 wherein said organ or duct comprises a beating heart.
32. The method of claim 19 wherein said ablation device is a microwave probe.
33. The method of claim 19 wherein said ablation device is a radiofrequency probe.

34. The method of claim 19 wherein said ablation device is a laser probe.

35. The method of claim 19 wherein said ablation device is a cryosurgical probe.

36. A system for ablating an interior tissue region of an organ or duct within a body of a patient comprising:

an ablation device having an elongated shaft having a proximal end, a distal end, and an elongated energy delivery portion proximate the distal end of the shaft which is configured to effect ablation of a tissue region within the interior of the organ or duct; and

an introducer having a proximal end, a sharpened distal end, and at least one lumen which is sized and dimensioned for slidable receipt of at least the energy delivery portion of the ablation device therethrough.

37. The system of claim 36 wherein said ablation device comprises a steering mechanism associated with the proximal end of the device which, upon manipulation, is configured to cause at least a portion of the energy delivery portion to assume an angular orientation relative to a longitudinal axis of the shaft of the device.

38. The system of claim 37 wherein said angular orientation is between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

39. The system of claim 37 wherein said angular orientation is between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

40. The system of claim 36 wherein said energy delivery portion comprises an antenna which is configured to be electrically coupled to a source of microwave energy.

41. The system of claim 36 wherein said energy delivery portion is preshaped to extend at an angle relative to a longitudinal axis of the shaft of the device.

42. The system of claim 41 wherein said energy delivery portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

43. The system of claim 41 wherein said energy delivery portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

44. The system of claim 36 wherein said energy delivery portion includes a biasing element which is configured to bias the energy delivery portion into a preshaped angular orientation relative to a longitudinal axis of the shaft of the ablation device.

45. The system of claim 44 wherein said biasing element comprises a nitinol wire.

46. The system of claim 36 wherein said organ or duct comprises a beating heart.

47. The system of claim 36 wherein said ablation device is a microwave probe.

48. The system of claim 36 wherein said ablation device is a radiofrequency probe.

49. The system of claim 36 wherein said ablation device is a laser probe.

50. The system of claim 36 wherein said ablation device is a cryosurgical probe.

51. The system of claim 36 wherein an outer diameter of the shaft is less than about 3 mm.

52. The system of claim 47 wherein the ablation device further comprises a

microwave antenna which is electrically coupled to a transmission line, and a ground plane electrically coupled to the transmission line and positioned proximally to the antenna, wherein said ground plane is configured to couple electromagnetic energy between the antenna and the transmission line.

Sub a3 53. The system of claim 36 wherein said energy delivery portion is configured to be positioned at least a short distance away from a tissue region to be ablated within an interior of the organ or duct of the body.

54. The system of claim 36 wherein said distal end of the introducer is preshaped to extend at an angle relative to a longitudinal axis of the introducer.

55. The system of claim 54 wherein said distal end of the introducer extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the introducer.

56. The system of claim 54 wherein said distal end of the introducer extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the introducer.

Sub a4 57. A microwave ablation device for effecting ablation of an interior tissue region within an organ or duct within a body of a patient comprising an elongated shaft having a proximal end portion, a distal end portion having a sharpened distal end, and a microwave energy delivery portion located proximate to the distal end portion of the shaft, wherein said sharpened distal end is configured to penetrate a wall of the organ or duct to facilitate placement of the microwave energy delivery portion within the interior of the organ or duct.

58. The device of claim 57 wherein said energy delivery portion comprises a microwave antenna which is located within said distal end portion of the shaft.

59. The device of claim 57 wherein said energy delivery portion includes a needle microwave antenna.

60. The device of claim 59 wherein an outer diameter of the needle antenna is less than about 3 mm.

61. The device of claim 57 wherein said distal end portion of the device is preshaped to extend at an angle relative to a longitudinal axis of the shaft.

62. The device of claim 61 wherein said distal end portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

63. The device of claim 61 wherein said distal end portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

64. The device of claim 57 wherein said distal end portion comprises a dielectric material which substantially surrounds the distal end portion.

65. The device of claim 57 wherein a thickness of the dielectric material varies along a length of the distal end portion of the device.

66. The device of claim 57 wherein said energy delivery portion is configured to be positioned at least a short distance away from a tissue region to be ablated within the interior of the organ or duct.

67. The device of claim 57 wherein said energy delivery portion is configured to be positioned in contact with a tissue region to be ablated within the interior of the organ or duct.

68. The device of claim 57 further comprising a conductive element which is coupled to the shaft at a spaced apart location from the energy delivery portion and which is configured to be positioned in at least close proximity to an outer wall of the organ or duct when the energy delivery portion is positioned inside the organ or duct.

69. The device of claim 68 wherein the conductive element comprises a metallic strip.

70. The device of claim 69 wherein the metallic strip is spaced-apart from the energy delivery portion at a distance of between about 1 to 15 mm.
71. The device of claim 69 wherein the metallic strip is formed from a metallic foil.
72. The device of claim 68 wherein the conductive element comprises a metallic wire.
73. The device of claim 72 wherein the metallic wire is formed from silver.
74. The device of claim 68 wherein the conductive element extends at an angle relative to a longitudinal axis of the shaft of the device.
75. The device of claim 68 wherein the conductive element is arranged to attract an electric field generated by the energy delivery portion to provide a sufficiently high electric field proximate the energy delivery portion which is sufficient to effect ablation of tissue.

Pub 267 (76) A microwave ablation device for effecting ablation of an interior tissue region within an organ or duct within a body of a patient comprising an elongated shaft having a proximal end portion, a distal end portion having a sharpened distal end, and a microwave energy delivery means located proximate to the distal end portion of the shaft for effecting ablation of tissue within the interior of the organ or duct, wherein said sharpened distal end is configured to penetrate a wall of the organ or duct to facilitate placement of the microwave energy delivery means within the interior of the organ or duct.

77. The device of claim 76 wherein said microwave energy delivery means comprises a needle microwave antenna.

Pub 277 (78) An ablation device comprising an elongated shaft having a proximal end portion, a distal end portion, and a pre-shaped elongated energy delivery

portion located proximate to the distal end portion which is configured to be positioned adjacent to or in contact with a tissue surface of an organ or duct to effect ablation thereof, wherein said energy delivery portion is formed from a shape memory material.

79. The device of claim 78 wherein said shape memory material comprises Nitinol.

80. The device of claim 78 wherein the energy delivery portion further comprises a conductive layer overlying the shape memory material.

81. The device of claim 80 wherein said conductive layer comprises silver plating.

82. The device of claim 78 wherein said elongated energy delivery portion is pre-shaped to extend at an angle relative to a longitudinal axis of the shaft.

83. The device of claim 82 wherein said energy delivery portion extends at an angle of between about 0 and 90 degrees relative to the longitudinal axis of the shaft.

84. The device of claim 82 wherein energy delivery portion extends at an angle of between about 45 and 135 degrees relative to the longitudinal axis of the shaft.

85. The device of claim 78 further comprising an introducer having a proximal end portion, a distal end portion having a sharpened distal end, and at least one lumen which is sized and dimensioned for slidable receipt of the ablation device therethrough.

86. The device of claim 78 wherein the energy delivery portion comprises a microwave antenna.

87. The device of claim 78 wherein the energy delivery portion has a sharpened

distal end which is configured to penetrate through a wall of an organ or duct.

88. The device of claim 78 wherein the energy delivery portion is configured to substantially conform to an inner wall of a heart when positioned through a penetration in a wall of the heart.

89. The device of claim 88 wherein the energy delivery portion is configured to substantially conform to a tissue region surrounding a pulmonary vein.

90. The device of claim 88 wherein the energy delivery portion is configured to substantially conform to at least a portion of a lateral wall of the right atrium to treat typical or atypical atrial flutter.

91. The device of claim 78 wherein the energy delivery portion is configured to be coupled to a source of microwave energy.

92. The device of claim 78 further comprising a conductive element which is coupled to the shaft at a spaced apart location from the energy delivery portion and which is configured to be positioned in at least close proximity to an outer wall of the organ or duct when the energy delivery portion is positioned inside the organ or duct.

93. The device of claim 92 wherein the conductive element comprises a metallic strip.

94. The device of claim 93 wherein the metallic strip is spaced-apart from the energy delivery portion at a distance of between about 1 to 15 mm.

95. The device of claim 93 wherein the metallic strip is formed from a metallic foil.

96. The device of claim 92 wherein the conductive element comprises a metallic wire.

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97. The device of claim 96 wherein the metallic wire is formed from silver.

98. The device of claim 92 wherein the conductive element extends at an angle relative to a longitudinal axis of the shaft of the device.

99. The device of claim 92 wherein the conductive element is arranged to attract an electric field generated by the energy delivery portion to provide a sufficiently high electric field proximate the energy delivery portion which is sufficient to effect ablation of tissue.

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